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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,385	02/27/2002	Satoshi Hirahara	220049US0	4760
22850	7590	09/23/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER VO, HAI	
			ART UNIT 1794	PAPER NUMBER
			NOTIFICATION DATE 09/23/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/083,385

**Applicant(s)**

HIRAHARA ET AL.

**Examiner**

Hai Vo

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 49-64,66-75 and 77-82 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49-64,66-75 and 77-82 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

1. The 112 claim rejections have been withdrawn in view of the present amendment.
2. The 102/103 rejections over Lisowsky have been overcome in view of the present amendment. However, other art rejections are maintained. In addition, new grounds of rejections are made in view of newly discovered reference to McCullough, Jr. et al (US 4,868,038).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 49-53, 55-60, 62-64, 66-72, 74, 75, and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lisowsky (US 5,858,511) in view of Mitchell et al (US 4,396,663). Lisowsky discloses a conductive carbonaceous fiber fabric having a thickness of 0.001 to 0.1 in (column 3, lines 45-50; and column 4, lines 9-11). Carbonaceous fibers are axially oriented to one another as shown in figure 1. The fabric comprises a binder in an amount of 5 to 15 wt% (column 4, lines 60-64). Lisowsky discloses the fabric being coated with a dispersion of the polymeric material such as phenolic in a diluent (column 4, lines 45-65). Likewise, the thermoset precursors are present as fine particles in the dispersion solution. The coating is applied by spraying (column 4, lines 35-37). Lisowsky discloses a carbon composite material comprising a binder in an amount of from 0.01 to 4% by

weight based on the weight of the carbon composite material. Therefore, it is necessary and thus obvious for the skilled artisan to look to the prior art for the suitable content of the binder used in frictional applications. Mitchell, teaches a carbon composite material suitable as a friction material comprising a binder in an amount of from 0.5% to 15% by weight based on the weight of the carbon composite material. This is overlapping with the claimed range. Therefore, in an absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply an organic binder in a small amount down to 0.5 wt% to the carbon fibers without totally encapsulating the fibrous mass motivated by the desire to eliminate the microcracking and delamination associated with fully encapsulated resin bonded structures during subsequent carbonization processing steps. Since Lisowsky uses the same binders (thermosetting resins) and the same coating techniques to form the coated carbonaceous fiber fabric as Applicants, it is not seen that the binder could not have been present discontinuously as particles at the point contact between the fibers. It appears that Lisowsky as modified by Mitchell was using the same materials and the same technique to form the carbonaceous fiber fabric as Applicants. The carbonaceous fiber fabric comprises a binder present in a very small amount to bond the woven fabric materials together at a multiplicity of bonding sites. The binder is applied to the fabric material by spraying and present in an amount within the claimed range. The coated carbonaceous fiber fabric has a thickness within the claimed range. Therefore, it is the examiner's position that a bending resistance, an in-plane volume

resistivity, a gas permeability, a degree of fluffing, basis weight would be inherently present as like material has like property. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete (Note discussion found in *Ex parte Slob*, 157 USPQ 172). This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It has been held that a recitation with respect to the manner in which a claimed carbonaceous fiber fabric is intended to be employed does not differentiate the claimed carbonaceous fiber fabric from a prior art friction material satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

5. Claims 54, 61, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lisowsky (US 5,858,511) in view of Mitchell et al (US 4,396,663) as applied to claim 49 above, in view of Winckler (US 5,662,993). Lisowsky discloses a carbon composite material suitable as a friction material. Lisowsky does not specifically disclose a diameter of the fiber and carbonaceous fibers being twisted yarns. Winckler, however, teaches a carbon composite material suitable as a friction material comprising a woven fabric consisting of carbon based fibers spun into bundles and the bundles twisted into strands. Winckler teaches the fibers having an average fiber of 6 to 12 microns (column 5, lines 55-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the carbonaceous fiber comprising twisted yarns as described by Winckler motivated by the desire to control oil flow while retaining structural integrity

and balancing other properties of the friction material (see column 5, lines 50-60 of Winckler). It appears that the carbon composite article of Lisowsky as modified by Mitchell and Winckler are a woven fabric composed of carbonaceous fibers having an average fiber diameter within the claimed range and the contact points of the fibers are bonded together by a binder resin. Lisowsky as modified by Mitchell and Winckler was using the same materials and the same technique to form the carbonaceous fiber fabric as Applicants. The carbonaceous fiber fabric comprises a binder present in a very small amount to bond the woven fabric materials together at a multiplicity of bonding sites. The binder is applied to the fabric material by spraying and present in an amount within the claimed range. The coated carbonaceous fiber fabric has a thickness within the claimed range. Therefore, it is the examiner's position that the point contact would be inherently present in the range instantly claimed.

6. The art rejections over Lisowsky in view of Mitchell have been maintained for the following reasons. Applicants argue that the combined teachings of Lisowsky and Mitchell fail to teach or suggest the content of the phenolic resin set out in the claims. The examiner respectfully disagrees. Mitchell discloses the binder present in the amount ranging from 0.5 to 15% by weight, which is overlapping with the claimed range. Likewise, Michell is evident that the phenolic resin binder can be used in an amount down to 0.5% by weight in the carbon composite material. This is within the claimed range. The arguments that as the binder is present in an amount of 7.9 wt%, the gas permeability of the sheet has reduced significantly in

accordance to the specification of the present invention are not found persuasive to render the claims unobvious over the prior art. In the first place, as previously discussed, Michell establishes a state of fact, that is, the binder can be incorporated in the carbon composite material in a small amount down to 0.5 wt%. Secondly, nothing specific about the desired gas permeability associated with the amount of binder that is lower than 0.5 wt% is incorporated into the claims. Accordingly, the art rejections are sustained.

7. Claims 49-60, 63, 66-75, and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of Suzuki (US 5,439,746). Muraki teaches a woven carbon fiber fabric used in golf clubs having a bending resistance of 7mm to 12mm (column 7, lines 40- 45) and a unit weight from 120 to 250 g/m<sup>2</sup> (column 5, line 15) within the claimed ranges. Muraki teaches the woven carbon fiber fabric obtained by weaving carbon fiber bundles into two-dimensional woven fabric (column 2, lines 55-60). The fibers bonded to one another by an epoxy resin binder in an amount of 1.8 wt% based on the weight of the woven fabric (column 2, lines 10-12, and column 3, lines 18-22, example 2). The resin binder includes bisphenol A type epoxy resin or phenol novolak type epoxy resin (column 3, lines 45-50). These epoxy resin compositions comprise a phenolic resin. Muraki does not specifically disclose a thickness of the woven fabric. Suzuki teaches a golf club shaft comprising a carbon fiber that is impregnated with an epoxy resin (abstract). Suzuki teaches the woven fabric having a thickness of 200 microns or 0.2 mm (column 14, line 28). Therefore, it would have been obvious to one having

ordinary skill in the art at the time the invention was made to employ the woven fabric having a thickness as taught by Suzuki because such is a typical thickness of a woven fabric for forming the golf club shaft and Suzuki provides necessary details to practice the invention of Muraki. It appears that the woven fabric of Muraki as modified by Suzuki meets all the structural limitations and chemistry as required by the claims. Therefore, it is not seen that the volume resistivity, air permeability, and degree of fluffing could not be inherently present as like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It has been held that a recitation with respect to the manner in which a claimed carbonaceous fiber fabric is intended to be employed does not differentiate the claimed carbonaceous fiber fabric from a prior art friction material satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Muraki does not specifically disclose an average diameter of the carbon fiber. Suzuki teaches the woven fabric comprising the carbon fiber having a diameter of 7 microns (column 14, line 52). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the carbon fiber having a diameter instantly claimed motivated by the desire to provide improved tensile modulus to the composite structure.

Muraki does not specifically disclose the carbon fiber comprising a carbonization of acrylic fibers. Suzuki teaches the carbon fibers being a product of pitch-series carbon fiber (column 12, line 48). Therefore, it would have been obvious

to one having ordinary skill in the art at the time the invention was made to employ the pitch-series carbon fiber forming a woven fabric of Muraki because such is an intended use of the material and Suzuki provides necessary details to practice the invention of Muraki.

8. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of Suzuki (US 5,439,746) as applied to claim 49 above, further in view of Holzl et al (US 4,716,064). Muraki does not specifically disclose the carbon fibers comprising twisted yarns. Holzl, however, teaches a composite structure for use in aircraft industry comprising carbon fibers that are woven or otherwise twisted together (figures 2a-2d). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the carbon fibers in the form of twisted yarn for the woven fibers since twisted yarns and woven fibers have been shown in the art to be recognized equivalent forms of the carbon fibers for use in aircraft industry.
9. The art rejections based on Muraki have been maintained for the following reasons. Applicants contend that Muraki fails to teach or suggest a phenolic resin binder. The examiner respectfully disagrees. Muraki discloses the resin binder including bisphenol A type epoxy resin or phenol novolak type epoxy resin (column 3, lines 45-50). These epoxy resin compositions comprise a phenolic resin. Accordingly, the art rejections are sustained.
10. Claims 49-60, 63, 66-75, and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of McCullough, Jr. et al (US

4,868,038) and Suzuki (US 5,439,746). Muraki teaches a woven carbon fiber fabric used in golf clubs having a bending resistance of 7mm to 12mm (column 7, lines 40-45) and a unit weight from 120 to 250 g/m<sup>2</sup> (column 5, line 15) within the claimed ranges. Muraki teaches the woven carbon fiber fabric obtained by weaving carbon fiber bundles into two-dimensional woven fabric (column 2, lines 55-60). The fibers bonded to one another by an epoxy resin binder in an amount of 1.8 wt% based on the weight of the woven fabric (column 2, lines 10-12, and column 3, lines 18-22, example 2). The resin binder includes bisphenol A type epoxy resin or phenol novolak type epoxy resin (column 3, lines 45-50). These epoxy resin compositions actually comprise a phenolic resin. Alternatively, assuming Muraki does not teach the phenolic resin binder. McCullough, however, teaches the carbonaceous fiber reinforced composite material comprising a phenolic resin, an epoxy as a resin binder (column 2, lines 45-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a phenolic resin or use in combination with the epoxy resin for the binder since the phenolic resin and epoxy resin have been shown in the art to be recognized equivalent binders for the carbon fiber fabric material.

Muraki does not specifically disclose a thickness of the woven fabric. Suzuki teaches a golf club shaft comprising a carbon fiber that is impregnated with an epoxy resin (abstract). Suzuki teaches the woven fabric having a thickness of 200 microns or 0.2 mm (column 14, line 28). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the woven

fabric having a thickness as taught by Suzuki because such is a typical thickness of a woven fabric for forming the golf club shaft and Suzuki provides necessary details to practice the invention of Muraki. It appears that the woven fabric of Muraki as modified by McCullough and Suzuki meets all the structural limitations and chemistry as required by the claims. Therefore, it is not seen that the volume resistivity, air permeability, and degree of fluffing could not be inherently present as like material has like property. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It has been held that a recitation with respect to the manner in which a claimed carbonaceous fiber fabric is intended to be employed does not differentiate the claimed carbonaceous fiber fabric from a prior art friction material satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Muraki does not specifically disclose an average diameter of the carbon fiber. Suzuki teaches the woven fabric comprising the carbon fiber having a diameter of 7 microns (column 14, line 52). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the carbon fiber having a diameter instantly claimed motivated by the desire to provide improved tensile modulus to the composite structure.

Muraki does not specifically disclose the carbon fiber comprising a carbonization of acrylic fibers. Suzuki teaches the carbon fibers being a product of pitch-series carbon fiber (column 12, line 48). Therefore, it would have been obvious

to one having ordinary skill in the art at the time the invention was made to employ the pitch-series carbon fiber forming a woven fabric of Muraki because such is an intended use of the material and Suzuki provides necessary details to practice the invention of Muraki.

11. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muraki et al (US 5,599,612) in view of McCullough, Jr. et al (US 4,868,038) and Suzuki (US 5,439,746) as applied to claim 49 above, further in view of Holzl et al (US 4,716,064). Muraki does not specifically disclose the carbon fibers comprising twisted yarns. Holzl, however, teaches a composite structure for use in aircraft industry comprising carbon fibers that are woven or otherwise twisted together (figures 2a-2d). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the carbon fibers in the form of twisted yarn for the woven fibers since twisted yarns and woven fibers have been shown in the art to be recognized equivalent forms of the carbon fibers for use in aircraft industry.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hai Vo/  
Primary Examiner, Art Unit 1794